LIVE CASE GUIDE

Newest developments demonstrated by world experts – transmitted in 3D
Dear Colleagues,

During the 4th Aortic Live Symposium 20 live cases are scheduled to be performed and transmitted to the auditorium. The aim of this booklet is to give you an overview about the live case schedule and to provide a practical guide through the procedures.

We hope for your understanding that with respect to the clinical needs of the patients changes of the schedule may occur. Furthermore, the anticipated procedural steps are just an outline of the procedure.

Depending on the discretion of the operator the procedural strategy or the choice of material may vary.

Sincerely yours,

Prof. Tilo Köbel and Prof. Heinz Jakob

Also on behalf of the co-directors
CASE 01 | VALVE-SPARING ROOT REPAIR WITH GETINGE CARDIOROOT GRAFT IN SLEEVE-TECHNIQUE

Live from Essen | Session 1 | 08:30-13:00

Patient data: Male, 45 years
Operators: A. Gamba, T. Tasca, K. Tsagakis
Clinical data: Aortic root aneurysm, mild AV regurgitation
Risk factors: Obesity BMI 54
Procedural steps:
1. Median sternotomy, cardiopulmonary bypass
2. Demonstration of AV and aortic root
3. Preparation of Cardioroot-Graft
4. Sleeve procedure
5. TEE, result

Materials:
1. Getinge Cardioroot-Graft
2. B.Braun EinsteinVision 3.0

CASE 02 | MINIMALLY INVASIVE AORTIC VALVE REPAIR

Live from Hamburg | Session 1 | 08:30-13:00

Patient data: Male, 57 years, U. I.
Operators: G. El Khoury, E. Girdauskas
Clinical data: Severe aortic regurgitation (tricuspid aortic valve), marginal aortic root dilatation of 40mm
Risk factors: Hypertension, s/p stroke 2012, slipped disc (lumbar spine)
Procedural steps:
1. Median sternotomy / CPB
2. Evaluation of aortic valve, identification of the mechanism of regurgitation
3. Aortic valve repair (correction of RCC prolapse and AV annular stabilization by means of reimplantation technique)
4. Intraoperative TEE control after AV repair procedure

Material: Vascutek Valsalva graft
CASE 03 | TRANSFEMORAL TAVI WITH MEDTRONIC EVOLUT PRO

Live from Berlin | Session 1 | 08:30-13:00

Patient data: Female, 82 years
Operators: A. Unbehaun, C. Klein, A. Meyer
Clinical data: Aortic stenosis (NYHA II-III, CCS II-III, dizziness, s/p syncope),
Moderate mitral regurgitation (annulus calcification),
Paroxysmal atrial fibrillation (apixaban),
s/p stroke, s/p hip replacement, Lung emphysema
Risk factors: EuroSCORE-II 4.2%, STS PRoM 3.5%, STS MoM 19.9%,
Permanent stroke 4.4%, Σ: Intermediate surgical risk,
ACC/STS TAVR In Hospital Mortality Risk 2.0%
Present state: ACC/STS TAVR risk score 4.5%
Procedural steps: 1. Conscious sedation, percutaneous femoral access,
Medtronic Evolut PRO 26 mm
2. BAV (TrueFlow balloon without rapid pacing)
3. Standard TF-TAVI procedure
Materials: 1. Abbott Proglide
2. Bard TrueFlow Balloon 46 mm
3. Medtronic Evolut PRO

CASE 04 | TRANSAXILLARY TAVI WITH NVT ALLEGRA

Live from Hamburg | Session 1 | 08:30-13:00

Operators: U. Schäfer, D. Wendt, L. Conradi, F. Deuschl
Risk factors: Elderly patient with severe, symptomatic aortic stenosis, comorbid conditions precluding surgical aortic valve replacement with limited access for TAVI.
Procedural steps: 1. Establish access via left subclavian artery by a true percutaneous approach. Secure access by a long 0.014” safety-wire introduced via the left brachial artery and externalized via a femoral artery (blocking balloon 8mmx40mm placed in the thoracic aorta). Wire-guided puncture of the axillary artery, preclosure with two Proglides.
3. Retrograde wire-passage of aortic valve, exchange wire against Safari guidewire, insert the 18Fr introducer sheath with subsequent TAVI from this access site. Perform balloon aortic valvuloplasty (BAV) during rapid ventricular pacing if needed before TAVI. Positioning and stepwise deployment of transcatheter heart valve (THV) according to IFU.
4. Access site closure under dry conditions using the blocking balloon.
Materials: 1. Coronary j-tip wire, Terumo straight wire, Safari guide wire, Ply-Wire, short and long 6F sheaths, 5Fr Amplatz left (AL2) catheter, 18Fr Boston sheath
2. True Balloon as BAV balloon (if needed)
3. NVT Allegra Valve with Delivery System
4. Blocking balloon (any brand)
5. Siemens Artis Zeego
CASE 05 | TRANSAPICAL TAVI WITH BOSTON SCIENTIFIC ACURATE NEO

Live from Hamburg | Session 1 | 08:30-13:00

Operators: L. Conradi, U. Schäfer, A. Schäfer

Risk factors: Elderly patient with severe, symptomatic aortic stenosis, comorbid conditions precluding surgical aortic valve replacement

Procedural steps:
1. Establish minimally-invasive thoracic access via left-anterior minithoracotomy (5th intercostal space, skin incision approx. 4 cm, soft-tissue retraction), open pericardium, secure left ventricular (LV) access by felt-pledged u-stitches, place epicardial pacemaker lead in preparation of rapid ventricular pacing (RVP); simultaneously puncture of femoral vein (6F sheath as safety back-up) and femoral artery (6F sheath for placement of aortic root diagnostic pigtail catheter)
2. Puncture of LV, antegrade wire-passage of aortic valve using j-tip soft coronary wire, long 6F sheath, exchange wire against ST1 extra-stiff guidewire, insert 14F sheath, perform balloon aortic valvuloplasty (BAV) during rapid ventricular pacing
3. Exchange 14F sheath for valve delivery catheter (sheathless), positioning and stepwise deployment of transcatheter heart valve (THV)
4. Optional: postdilate THV depending on residual paravalvular leakage and/or transprosthetic gradient; closure of ventricular and thoracic access

Materials:
1. Coronary j-tip wire, extra-stiff guidewire, short and long 6F sheaths, Judkins-right catheter
2. Cook Check-Flo sheath 14F, Bard TrueDilatation BAV balloon
3. Boston Scientific transapical low-profile delivery catheter
4. Boston Scientific ACURATE neo transcatheter heart valve
5. Siemens Artis Zeego

CASE 07 | FROZEN ELEPHANT TRUNK WITH JOTEC E-VITA OPEN NEO

Live from Essen | Session 2 | 14:00-18:30

Patient data: Male, 79 years

Operator: K. Tsagakis

Clinical data: Arch aneurysm 55mm

Risk factors: Aberrant vertebral artery from the arch, St/p Stroke, St/p Carotis TEA left, St/p Carotis stent right, St/p Y-prosthesis

Procedural steps:
1. Transfemoral guide wire placement under TEE
2. Right axillary artery cannulation
3. Debranching left axillary and left vertebral artery with 8 mm graft and vein graft, respectively.
4. Bilateral selective cerebral perfusion and hypothermic circulatory arrest distally
5. Evaluation of distal LZ by angioscopy
6. FET in Zone 0, E-vita Open Neo concept
7. Debranching left carotid and innominate artery

Materials:
1. Jotec E-vita Open Neo
2. Jotec E-wire
3. Getinge Hemashield 8mm
4. Möller Medical LiquoGard
CASE 08 | FROZEN ELEPHANT TRUNK WITH VASCUTEK THORAFLEX HYBRID

Live from Hamburg | Session 2 | 14:00-18:30

Patient data: Female, 60 years, B. M.
Operators: C. Detter, J. Brickwedel
Clinical data: Ascending aortic aneurysm (50mm), thoracoabdominal aortic aneurysm Type II (76mm)
Risk factors: Arterial hypertension, nicotine abuse (20 pack years), no relevant CAD
Procedural steps:
1. Left supraclavicular incision, arterial cannulation of left subclavian artery via 8mm Vascutek Gelweave prosthesis
2. Median sternotomy, cannulation of the right atrium for venous drainage, ECC, systemic cooling to 24°C–26°C
3. Moderate hypothermic circulatory arrest (HCA), transection of the ascending aorta and the proximal aortic arch, (ante- and) retrograde blood cardioplegia for myocardial protection, selective bilateral antegrade cerebral perfusion (SACP) via two catheters inserted into the innominate and left carotid artery, occlusion of left subclavian artery
4. Total aortic arch replacement in FET technique using the Vascutek Thoraflex 2nd generation
5. Stent deployment and distal anastomosis in zone 2
6. Arterial cannulation of the perfusion side branch for early antegrade lower body perfusion
7. Anastomosis to proximal innominate and left carotid artery using 2nd and 3rd branch
8. Total aortic arch and ascending aortic replacement
9. Anastomosis to distal left subclavian artery using 1st branch during reperfusion and rewarming

Materials:
1. Vascutek Thoraflex 2nd generation
2. Vascutek Gelweave Prosthesis, 8mm

CASE 09 | BRANCHED TEVAR WITH COOK ZENITH BRANCHED GRAFT

Live from Hamburg | Session 2 | 14:00-18:30

Patient data: Male, 80 years, S. K.
Operators: S. Haulon, N. Tsilimparis, S. Aleed
Clinical data: Type Ia Endoleak after TEVAR 2015 for TAAA; leftside carotid-subclavian bypass 1.9.17
Risk factors: DM, chronic renal failure with dialysis-dependency, AF (INR 2-3), CAD, PAD with peripheral bypass (leftside femoropopliteal); no surgical candidate
Procedural steps:
1. Cutdown right CFA for main body (24F), 14F right VF for inferior vena cava (IVC) inflow-occlusion, percutaneous access left CFA (5F) for angiography catheter, cutoff RCCA for bridging stent (14F), percutaneous access left brachial artery (8F) for catheterization of LCCA and implantation of bridging stent LCCA and LSA plug
2. Catheterization of aortic valve for Lunderquist wire placement in left ventricle and marking of innomated artery and left subclavian artery by wire
3. Main body deployment under serial angiography and IVC-inflow-occlusion
4. Catheterization of first inner branch via innominate artery, implantation of bridging stent and relining; reconstruction of RCCA to restore perfusion
5. Catheterization of second inner branch via LCCA and implantation of bridging stent, plug LSA

Materials:
1. Cook Coda Balloon 46 mm
2. Cook Zenith branched graft and Cook Thoracic Extension for innominate artery
3. Bard Fluency, Medtronic Everflex
4. Philips Vessel-Navigator
CASE 10 | FENESTRATED TEVAR WITH COOK ZENITH FENESTRATED GRAFT

Patient data: Male, 77 years, F. W.
Operators: N. Tsilimparis, F. Heidemann
Clinical data: TAAA (64mm), penetrating ulcer descending aorta, shaggy aorta
Risk factors: Staged repair:
1. fTEVAR (scallop LCCA, fenestration LSA)
2. bEVAR (4-vessel branched)
Procedural steps:
1. Percutaneous access right CFA (22F) and Proglides, percutaneous access left CFA (5F), percutaneous access left brachial artery (7F)
2. Insertion of fenestrated main body and snaring of the preloaded guidewire for LSA
3. Angiography and development of fenestrated main body
4. Bridging stent LSA
Materials:
1. Abbott Proglide
2. Cook Zenith fenestrated graft
3. Cook Coda Balloon
4. Getinge Advanta, Medtronic Everflex
5. Philips Vessel-Navigator

CASE 11 | TEVAR ZONE 2 WITH JOTEC E-VITA THORACIC

Patient data: Male, 76 years, K. D.
Operators: S. Buz, A. Navasardyan
Clinical data: Descending aortic aneurysm, Diameter 70 mm
Risk factors: Coronary artery disease, c/o CABG 4 weeks ago, arterial hypertension
Procedural steps:
1. Left carotid subclavian bypass
2. Percutaneous femoral access
3. LAO angulation and angiogramm
4. Stent graft implantation
Materials:
1. Abbott Proglide
2. Jotec super stiff wire
3. Jotec E-vita Thoracic Stentgraft
CASE 13 | TEVAR IN HOSTILE ARCH WITH GORE CTAG (ACTIVE CONTROL SYSTEM)

Live from Regensburg | Session 2 | 14:00-18:30

Patient data: Female, 80 years, F. M.

Operators: K. Pfister, K. Oikonomou

Clinical data: Sub-acute aortic syndrome with refractory pain and IMH with prominent ulcer like projection

Risk factors: CAD, Hypertension, Diabetes, Adiposity

Acute onset 06.10.2017 with chest and interscapular pain

Procedural steps:
1. Unilateral femoral cut down, percutaneous contralateral access
2. Angiogram and introduction of the proximal stent-graft with overstenting of the left subclavian artery
3. Deployment of the distal stent-graft

Materials:
1. Conformable Gore TAG Thoracic with Active Control System (proximal stent-graft)
2. Conformable Gore TAG Thoracic (distal stent-graft)
CASE 14 | CERVICAL DEBRANCHING WITH VASCUTEK GELSOFT

Live from Hamburg | Session 3 | 08:30-13:00

Patient data: Female, 77 years, A. E.
Operator: A. Larena-Avellaneda, M. Scheerbaum
Clinical data: Aortic Arch Aneurysm (67mm), TAAA
Risk factors: Left carotid-subclavian bypass as staged procedure before branched arch repair
Supracoronal ascending aortic replacement 1/16 for aneurysm, HTA, I° atrioventricular block
Procedural steps:
1. Supraclavicular incision, preparation of LSA and LCCA
2. Heparinisation and clamping of the LSA, end-to-side anastomosis of bypass to LSA, declamping, flushing, heparin and clamping of the bypass
3. Clamping of the LCCA, end-to-side anastomosis of bypass to LCCA, declamping, flushing heparin, completion of the anastomosis
Material: Vascutek 8 mm Gelsoft prosthesis

CASE 15 | TAAA OPEN REPAIR WITH GETINGE HEMASHIELD

Live from Berlin | Session 3 | 08:30-13:00

Patient data: Female, 76 years, B. U.
Operators: R. Hammerschmidt, C. Knosalla, A. Meyer
Clinical data: Thoraco-abdominal aneurysm extent I
Risk factors: Hypertension, Nicotine abuse, Ascending replacement 2010
Procedural steps:
1. Normothermic perfusion femoro – femoral Selective organ perfusion
2. Thoraco-abdominal incision, retroperitoneal approach
3. Replacement from left subclavian artery to infrarenal aorta
Material: Getinge Hemashield prosthesis 28 mm
CASE 16 | PARARENAL ANEURYSM OPEN REPAIR WITH VASCUTEK GELSOFT

Live from Hamburg | Session 3 | 08:30-13:00

**Patient data:** Male, 70 years, B. G.
**Operators:** M. Jacobs, S. Wipper
**Clinical data:** Juxtarenal local aortic dissection and infrarenal aortic aneurysm (52mm), PAD with leftside occlusion of CFA, SFA and PFA as well as rightside CIA stenosis
**Risk factors:** Occlusion of left internal carotis artery, stenting of right internal carotid artery 2014, CAD with coronary bypass surgery 11/16
**Procedural steps:**
1. Bilateral preparation of CFA, SFA, PFA and median laparotomy
2. Bilateral endarterectomy femoral artery
3. Proximal: Infrarenal anastomosis, distal: bifemoral anastomosis
4. Reimplantation of lower left renal artery
**Material:** Vascutek Gelsoft Prosthesis

CASE 17 | BRANCHED EVAR WITH COOK ZENITH T-BRANCH

Live from Hamburg | Session 3 | 08:30-13:00

**Patient data:** Male, 70 years, K. D.
**Operators:** N. Tsilimparis, F. Heidemann, S. Aled
**Clinical data:** Aneurysm of visceral aorta (55mm) and postsurgical anastomotic aneurysm after open infrarenal tube graft repair
**Risk factors:** Leftside carotid-subclavian bypass 18.4.17 and TEVAR with chimney for LCCA and LSA Plug 21.4.17 for symptomatic Type B dissection, iliac stentgraft for leftside CIA aneurysm 2/17, open infrarenal tube graft repair 2001, PAD, COPD
**Procedural steps:**
1. Cutdown right CFA (22F), cutdown left CFA (16F), cutdown right brachial artery (12F)
2. Deployment of t-Branch, bifurcated graft and right iliac stentgraft, suture of CFA to restore leg perfusion
3. Establishment of through-and-through wire from right brachial artery to left CFA
4. Catheterization and bridging stent grafts for all four visceral vessel
5. Deployment of left iliac stentgraft for CI
**Materials:**
1. Cook Zenith T-Branch
2. Gore Viabahn
3. Bard Fluency
4. LiquoGard (Möller Medical), Philips Vessel-Navigator
5. Getinge Advanta
6. Medtronic Everflex Stent
**CASE 18 | BRANCHED EVAR FOR POST DISSECTION TAAA**

**Live from Regensburg | Session 3 | 08:30-13:00**

**Patient data:** Male, 55 years, T. I.

**Operators:** K. Oikonomou, K. Pfister, M. Janotta

**Clinical data:** Progressive 60 mm TAAA following Type B Dissection 2014

**Risk factors:** Hypertension, atrophic right kidney, st.p. fem-fem Bypass left → right 2014, st.p. right hemicolectomy 2014, paresis of the right lower extremity,

1st Procedure: Car-Car-Subcl Bypass and thoracoabdominal stentgrafts (4x) 02.10.2017

2nd Procedure: Deployment of bridging stentgrafts into LRA, SMA and IMA

**Procedural steps:**
1. Cut down of right axillary artery, puncture of the right SFA (through-and-through wire)
2. Introduction of coaxial 12F and 8F sheaths over the right axillary artery
3. Occlusion test of the CA under MEPs and intrasaccular blood pressure measurement
4. Deployment of the bridging stent into the CA

**Materials:**
1. Gore 12F DrySeal Flex Sheath, Cook 8F Raabe Sheath, Cook Zenith Thoracic end-graft (ZTEG ProForm and ZDEG ProForm)
2. Cordis 10x80 mm Powerflex Balloon, Cook Zenith custom-made branched endo-graft
3. Volcano intravascular imaging and pressure system
4. Bentley 9x57 and 10x37 BeGraft Plus

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**CASE 19 | ILIAC SIDEBRANCH EVAR WITH ENDOVASCULAR REPAIR WITH COOK ALPHA ABDOMINAL AND ZBIS**

**Live from Hamburg | Session 4 | 14:00-16:30**

**Patient data:** Male, 65 years, K. H.

**Operators:** B. Modarai, N. Tsilimparis

**Clinical data:** Aneurysm of right CIA (52mm), Aneurysm of left CIA (33mm), Infra renal AAA (43mm)

**Risk factors:** Bilateral ectasia of popliteal artery, Xarelto for DVT

**Procedural steps:**
1. Percutaneous/cutdown both CFA (20F)
2. Insertion of ZBIS device for right CIA, 12F sheath from left CFA for establishment of a femorofemoral through-and-through wire with a preloaded wire in ZBIS device, partial deployment of ZBIS, catheterization of IIA, bridging stent graft for IIA and complete deployment of ZBIS
3. ZBIS for left CIA
4. Bifurcated graft for infra renal aorta and bridging stents to ZBIS on both sides, stent relining for both EIA

**Materials:**
1. Cook EVAR and ZBIS devices
2. Getinge Advanta
3. Boston Scientific Wallstent
4. Cook Coda Balloon
5. Philips Vessel-Navigator
CASE 20 | ILIAC SIDE BRANCH AND INFRARENAL EVAR WITH JOTEC E-LIAC AND E-TEGRA

Live from Berlin | Session 4 | 14:00-16:30

Patient data: Male, 72 years
Operators: S. Buz, A. Navasardyan, T. Nazari-Shafti
Clinical data: Aortic abdominal aneurysm (max. diameter of 64 mm), dilatation of the right iliac artery (27 mm)
Medical history: None
Previous interventions: 2000 fundoplication for hiatal hernia, 2017 incisional hernia repair

Procedural steps:
1. Percutaneous bilateral access to the common femoral artery (preclose technique)
2. Implantation of side branch stentgraft in the common iliac artery right, partial deployment. Cross-over maneuver and insertion of 8fr sheath from left to right side. Catheterisation and stenting of internal iliac artery. Complete deployment of side branch graft.
3. Bifurcated stentgraft for infrarenal aorta
4. Bridging stents to side branch stentgraft and to left common iliac artery
5. Balloon dilatation of proximal infrarenal attachment site, all graft overlap site and distal iliac attachment site

Materials:
1. Abbott proglide
2. Jotec e-liac stentgraft
3. Jotec e-tegra stentgraft
4. Jotec Eventus stentgraft
5. Jotec Expand Balloon

CASE 21 | INFRARENAL EVAR WITH MEDTRONIC TUBE GRAFTS AND APTUS HELI-FX

Live from Regensburg | Session 4 | 14:00-16:30

Patient data: Male, 80 years, F. J.
Operators: K. Pfister, K. Oikonomou, M. Janotta
Clinical data: 67 mm infrarenal Aneurysm with angulated and slightly bell shaped proximal neck
Risk factors: Hypertension, GAD

Procedural steps:
1. Cut down left CFA, percutaneous access right CFA
2. Main body over the left groin
3. Introduction of the right iliac limb and left iliac extension
4. Proximal endoanchors at 45° LAO (2x) and 45° RAO (2x)

Materials:
1. Medtronic Endurant II main body 25 14 103
2. Medtronic Endurant iliac limbs 16 16 156 right / 16 16 124 left
3. Medtronic Reliant Balloon
4. Medtronic Aptus HeliFx Endoanchors
CASE 22 | AORTOILIAC REPAIR WITH GETINGE SYNERGY

Live from Hamburg | Session 4 | 14:00-16:30

Patient data: Male, 45 years, M. C.
Operators: J. Schmidli, S. Wipper
Clinical data: Aortoiliac false lumen aneurysm, right CIA 40mm
Risk factors: Ehlers-Danlos syndrome, Type A dissection, bio-prosthetic aortic valve + ascending aortic replacement 02/2015, CAD with coronary bypass 02/2015, TEVAR and Candyplug 03/2016

Procedural steps:
1. Median laparotomy
2. Infrarenal clamping and proximal anastomosis (if necessary supra-/infrarenal clamping)
3. Distal clamping and biiliacal anastomosis (if necessary transposition of right internal iliac artery to prosthesis)

Material: Getinge Synergy

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AORTIC LIVE
October 23–24, 2017
Bucerius Law School
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